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**A new species and a new record of the genus *Thoracochaeta*
(Diptera: Sphaeroceridae) from Japan,
with a key to the Japanese species**

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Abstract: A new species of the genus *Thoracochaeta* is described and illustrated from Japan. *Thoracochaeta gemina* Roháček et Marshall is recorded from Japan for the first time. A key to the Japanese species of *Thoracochaeta* is presented.

Key words: *Thoracochaeta*, a new species, Japan, Sphaeroceridae, Diptera, *Thoracochaeta gemina*

The members of the genus *Thoracochaeta* Duda are associated with wrack pile on the seashore, and sometimes occur from animal matter. These flies occur in huge numbers from small breeding materials, and sometimes become a nuisance. In Japan, Kurahashi et al. (1998) and Mihara et al. (1998) reported mass occurrence of *Thoracochaeta johnsoni* (Spuler, 1925) from refuse shells at oyster farms. Though it has not been published, such a case was also found in *T. seticosta* (Spuler, 1925) in Ishinomaki City, Miyagi Prefecture (Mr. M. Mihara, personal communication).

Recently, Marshall and Roháček (2000) and Roháček and Marshall (2000) revised the world species of *Thoracochaeta*, and recorded 34 species from all the zoogeographical regions. Up to the present, 6 species are recorded from Japan. In this paper, I describe a new species and record *T. gemina* Roháček et Marshall, 2000 from Japan for the first time. A key to 8 Japanese species is also presented.

The specimens examined in this study including type series are preserved in the Reference Museum, Department of Medical Entomology, National Institute of Infectious Diseases, Tokyo (NIID).

***Thoracochaeta gemina* Roháček et Marshall, 2000**
(Japanese name: Tsumaaka-susubane-funkobae)

Thoracochaeta gemina Roháček et Marshall, 2000: 353.

Diagnosis. Body length 1.4–1.9 mm, general color dark brown; lunule reddish-brown contrasting to dark brown anterior part of frons; eye rounded and large, its longest diameter about 4.0 times as long as the smallest genal width; a microseta between prescutellar *dc* and *ac* setae present; first costal sector with very long sparse setae, 2nd costal sector distinctly longer than 3rd sector; *t*₃ with 3 pairs of *ad* and *pd* setae, no ventral spine or setae excluding a long apicoventral seta; surstylus with 2 spines.

Specimens examined. JAPAN: 3♂, 1♀, Kamiiso, Oshima, Hokkaido, June 20, 1982, T. Hayashi; 3♂, Kaminokuni, Hiyama, Hokkaido, Aug. 5, 2003, T. Hayashi; 14♂, 13♀,

Nemuro, Nemuro, Hokkaido, Aug. 22, 1995, T. Hayashi.

Remarks. This species was formerly known only from northern and central part of the Kuril Islands (Antsiferova and Yankicha), Russia (1♂, 2♀). It is recorded from Japan here for the first time.

***Thoracochaeta setifer* Hayashi sp. nov.**

(Figs. 2, 4-7)

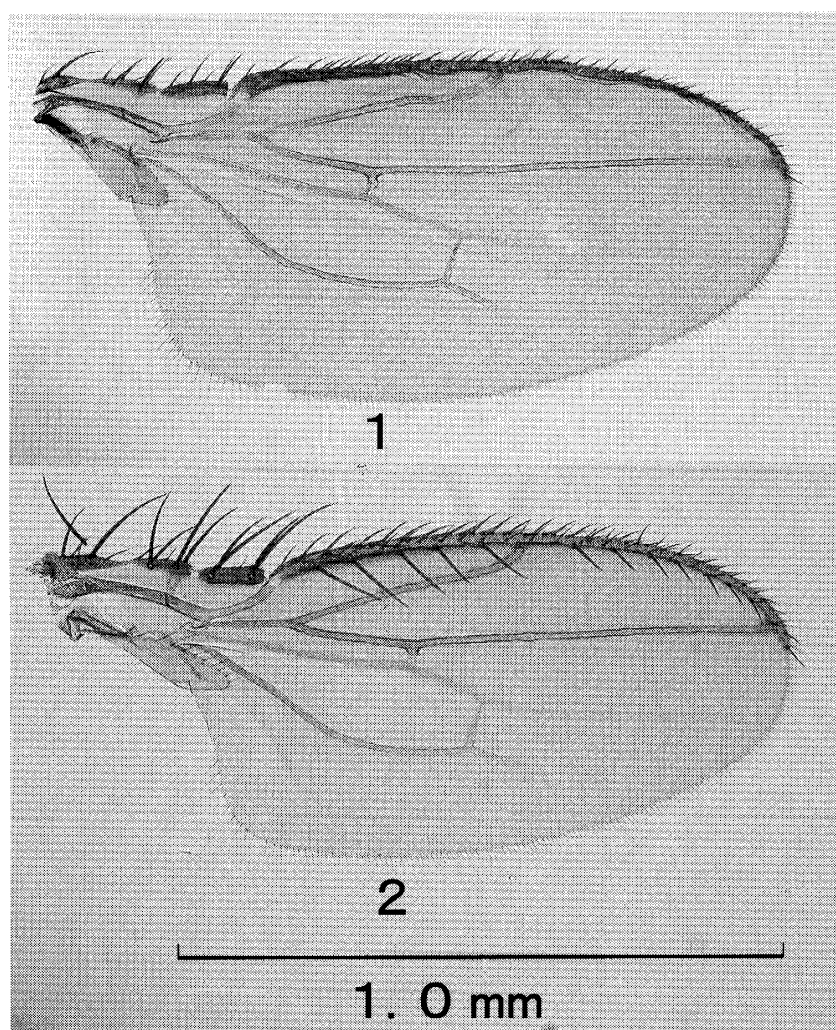
(Japanese name: Togeheri-susubane-funkobae)

Description.

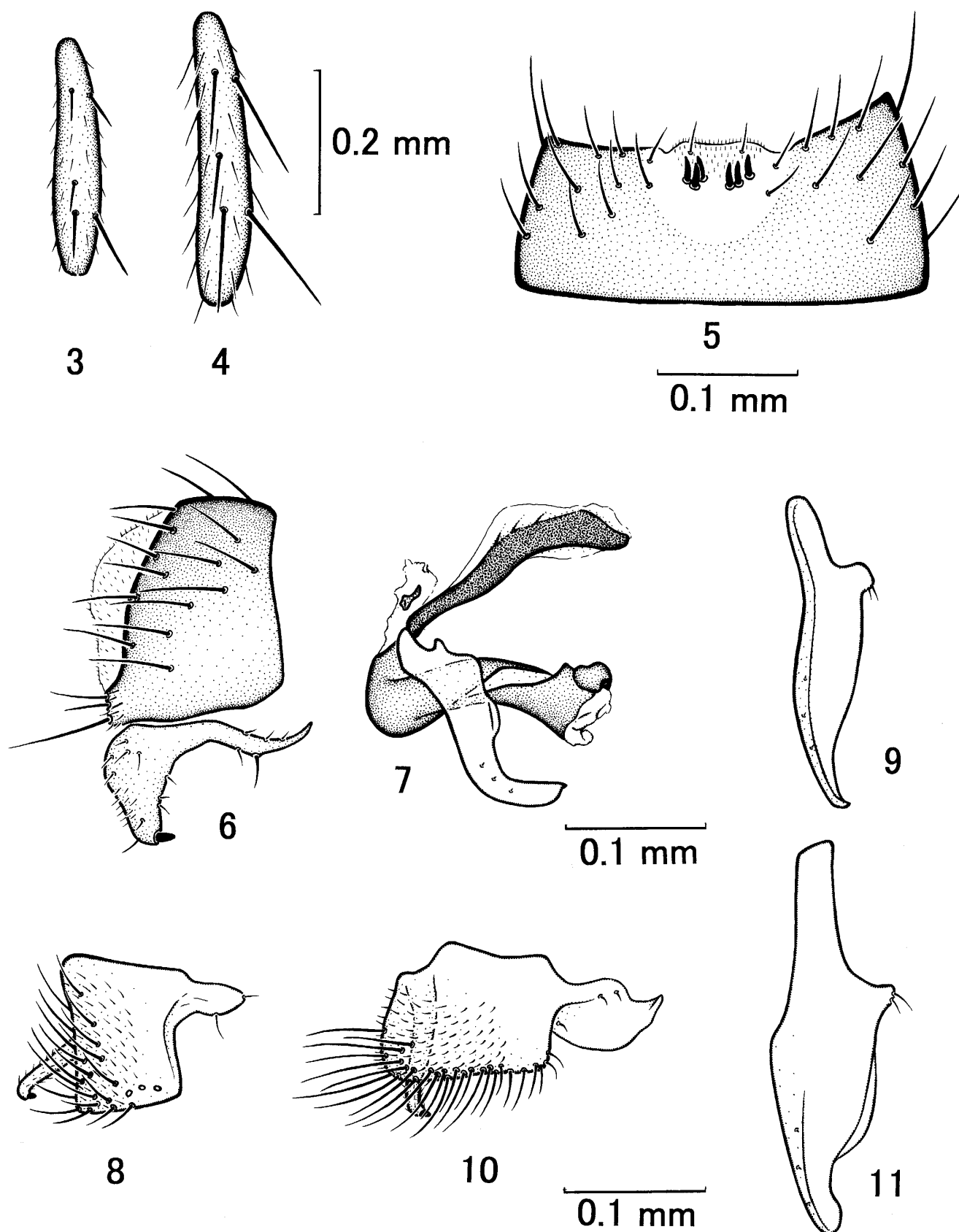
Body length: Male 1.3–1.5 mm (holotype 1.3 mm); female 1.5–1.8 mm.

Head: Generally dark brown, anterior part of frons somewhat paler; setae generally stronger than those of *T. brachystoma*; 3–4 *if*, foremost one small; eye oval, its longest diameter about 2.5 times as long as smallest genal width; antenna brown; arista long pubescent.

Thorax: Dark brown, dusted, 5 *dc* (2+3), anterior 3 *dc* strongly inclinate, much stronger than those of *T. brachystoma*; 5–6 irregular rows of *ac* microsetae in front of suture, medial prescutellar *ac* pair distinctly enlarged; microsetae between prescutellar *dc* and *ac* absent; anepisternum, katepisternum, anepimeron and meron dark brown; 2 *kepst*, both very strong; scutellum rounded triangular, somewhat wider than long; 2 *sctl* long, apical one 1.6–2.0 and lateral one 0.9–1.2 times as long as scutellum.



Figs. 1–2. Wings. 1: *Thoracochaeta brachystoma* (male). 2: *T. setifer* sp. nov. (male paratype).



Figs. 3-4. Left mid tibiae, anterodorsal view. 3: *Thoracochaeta brachystoma*. 4: *T. setifer* sp. nov.. Figs. 5-7 *T. setifer* sp. nov.. 5: Male sternite 5. 6: Male terminalia, lateral view. 7: Male inner genitalia, lateral view. Figs. 8-9 *T. seticosta*. 8: Surstylus, lateral view. 9: Paramere, lateral view. Figs. 10-11 *T. acinaces*. 10: Surstylus, lateral view. 11: Paramere, lateral view.

Wing (Fig. 2): Brown, veins brown; C brown, distinctly overpassed R_{4+5} ; first sector with very long setae, 2nd and 3rd sectors with long setae perpendicular to membrane; R_{4+5} almost straight; C-index = 0.83–1.00; r-m-dm-cu: dm-cu = about 1.4; halter with dark brown knob and brown stem.

Legs: Brown to dark brown, setae and hairs generally much longer than those of *T. brachystoma*; t_2 with 2 pairs of *ad* and *pd* setae proximally and distally, and an unpaired *ad* seta on basal 3/5 (Fig. 4), ventrally without any spines or setae except for a strong apicoventral seta; t_3 with 2–3 long dorsal hairs.

Abdomen: Dark brown. ♂. Sternite 5 (Fig. 5) resembling that of *T. brachystoma*, posteromedial lobe not so developed, furnishing microtrichia and a pair of hairs, and with 5–6 short spines in front of this lobe; epandrium (Fig. 6) rather small and with rather long dense setae; surstylus as in Fig. 6, much resembling that of *T. brachystoma*, its anterior part very slender and with a prominent ventral seta, posterior part with microtrichia and an apical spine; inner genitalia as in Fig. 7. ♀. Almost same structure as that of *T. brachystoma*, sternite 8 with a pair of long lateral setae and about 6 short setae near posterior margin; spermathecae with deep groove and shallow apical invagination, not discernible from those of *T. brachystoma*.

Holotype ♂, Nemuro, Nemuro, Hokkaido, Aug. 22, 1995, T. Hayashi.

Paratypes. 6♂, 4♀, same data as holotype.

Remarks. This species is closely related to *Thoracochaeta brachystoma* (Stenhammar, 1855) (e.g. t_2 chaetotaxy, male 5th sternite, postabdominal structures and the shape of spermathecae), but is easily distinguishable from it by the following external features: Both 2 *kepst* very strong; microsetae between prescutellar *dc* and *ac* absent; costa with very long setae including 2nd and 3rd sectors (Fig. 2); setae and hairs on t_2 very long (Fig. 4).

Type series were all collected on wrack pile on the seashore.

Key to the Japanese species of the genus *Thoracochaeta* Duda

1. Mid tibia with 2 pairs of *ad* and *pd* setae proximally and distally, and an unpaired *ad* seta (Figs. 3 and 4)..... 2
- Mid tibia with 3 or 4 pairs of *ad* and *pd* setae..... 3
2. Anterior *kepst* very weak, posterior *kepst* more than 4 times as long as anterior one; first costal sector with only moderate setae, 2nd and 3rd sectors without any long setae (Fig. 1); setae and hairs on mid tibia shorter (Fig. 3) *T. brachystoma* (Stenhammar)
- Both 2 *kepst* very strong; first costal sector with very long setae, 2nd and 3rd sectors with long setae perpendicular to wing membrane (Fig. 2); setae and hairs on mid tibia much longer (Fig. 4)..... *T. setifer* Hayashi sp. nov.
3. Mid tibia with 3 pairs of *ad* and *pd* setae..... 4
- Mid tibia with 4 pairs of *ad* and *pd* setae *T. johnsoni* (Spuler)
4. Frontal triangle with sparse setae *T. miranda* Roháček et Marshall
- Frontal triangle without any setae 5
5. Lunule reddish brown, contrasting to dark brown anterior part of frons; surstylus with 2 spines..... *T. gemina* Roháček et Marshall
- Lunule dark brown, same color as anterior part of frons; surstylus with one spine 6
6. One or two microsetae between prescutellar *dc* and *ac* setae; male mid tibia without ventral spines *T. zosterae* (Haliday)
- No microsetae between prescutellar *dc* and *ac* setae; male mid tibia with a row of short spines 7
7. Surstylus and paramere as in Figs. 8 and 9; spermathecae strongly grooved (see Roháček and Marshall, Fig. 107) *T. seticosta* (Spuler)
- Surstylus and paramere as in Figs. 10 and 11; spermathecae rather smooth (see Roháček and Marshall, Fig. 118) *T. acinaces* Roháček et Marshall

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